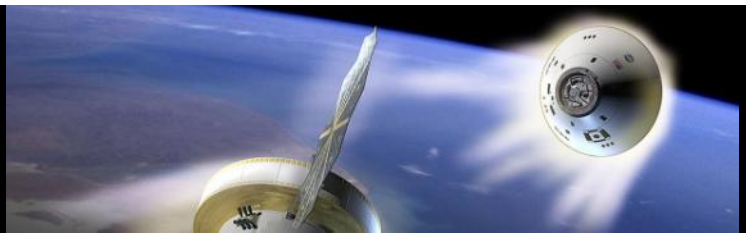
ORION
CREW EXPLORATION VEHICLE

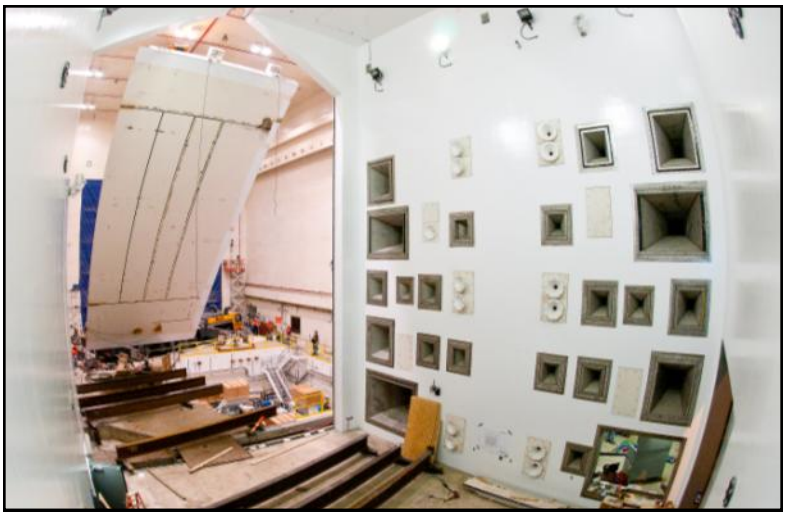
WEEKLY ACCOMPLISHMENTS



10.01.10

The Crew Module Ground Test Article team at the Michoud Assembly Facility in New Orleans, Louisiana finished loading and aligning the upper section of the birdcage tool (shown above) and began the initial Thermal Protection Support Structure (TPSS) fit checks. Next up, the team will work on the installation of the AFT Gussets and the TPSS.

Engineers at NASA Langley Research Center in Hampton, Virginia., performed a series of tests in the 20-ft. Vertical Spin Tunnel recently that measured the aerodynamics of a 6.25% model of the Orion crew module with deployed drogue parachutes. The purpose of the test (shown right) was to compare how the model performed in simulated flight versus a free-flight flight test in the tunnel. The test results are used to assist in developing higher fidelity modeling in simulation tools. Analysis will continue to develop detailed physics of the damping provided by the drogues.



Weighing in at 152,000 pounds (350,000 when filled with concrete), the 58–foot tall rolling door constructed of steel–welded plate (shown right) was installed at the Reverberant Acoustic Test Facility at NASA Glenn Research Center's Space Power Facility. When complete, the steel reinforced concrete chamber will accommodate high-power acoustic testing of large space vehicles and will be one of the largest and most powerful in the world, reaching an overall sound pressure level of 163 decibels in the empty chamber. The testing will demonstrate the performance and function of the vehicle during and after exposure to the acoustic environments of lift-off and ascent . To simulate the vehicle's extreme acceleration through Earth's atmosphere, horns (shown in the wall in photo) will be used to deliver sound power to the chamber, creating a sound seven times more powerful than standing next to a jet engine or a Formula 1 race car.

Communications and Public Outreach

A full-scale mock-up of Orion's Launch Abort System (LAS), known as the LAS pathfinder, is making its way atop a flatbed trailer from the U.S. Army's White Sands Missile Range in New Mexico to the Kennedy Space Center in Florida. The mock up will be utilized for future pathfinding operations at the Operations and Checkout Facility, the manufacturing factory for Orion. The LAS pathfinder was used for stacking operations in preparation for the successful Pad Abort 1 flight test, which occurred May 6, 2010.

Along the route, the LAS will stop at museums and science centers to give the public an opportunity to see actual spacecraft hardware first-hand and learn about the Orion crew exploration vehicle and its innovative launch abort system. The first stop (shown above) was at the Denver Museum of Nature & Science, where members of the NASA and Lockheed Martin Orion team volunteered to talk to school children, museum visitors, and news media about Orion and space exploration. The LAS pathfinder will also make stops in Orion, Rockford and Chicago, Illinois; the Great Lakes Science Center in Cleveland, Ohio; the Franklin Institute in Philadelphia, Pennsylvania and Langley Research Center before reaching its final stop at Kennedy Space Center Visitor Center.

Lockheed Martin participated in the Kennedy Space Center Family Day attended by approximately 20,000 badged employees and their guests. The Lockheed Martin exhibit, located in the Operations and Checkout Facility High Bay, included displays, videos, images, giveaways and hands on computer demonstrations highlighting the Shuttle External Tank, Fleet Ballistic Missile and Orion Programs. Lockheed Martin employees were available to answer visitor questions and give tours of the Orion High Bay. A child-friendly presentation, “Captain Orion and His Flying Machine” featuring Lockheed Martin employee Herb Yamada, was held throughout the day in the O&C’s Mission Briefing Room. The presentation was geared toward inspiring children in the areas of space, science and math.